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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,777	09/12/2003	Osamu Saito	107355-00086	5766

7590 10/06/2005

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EXAMINER
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KLEBE, GERALD B

ART UNIT	PAPER NUMBER
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3618

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/660,777		SAITO ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Gerald B. Klebe		3618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 2 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

*G.B. Klebe*  
29 September 2005

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>09/12/2003</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

*[Handwritten mark]*

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## **DETAILED ACTION**

### ***Election / Restriction Response***

1. Applicant's election filed 07/20/2005 of Species I, Figures 1-9, claims 1 and 3-9 reading thereon, is acknowledged.

Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Consequently, the restriction is held to be proper and claim 2 is hereby withdrawn from further consideration as being drawn to non-elected species.

An examination on the merits of claims 1 and 3-9 follows.

### ***Claim(s) Objections - Informalities***

2. The claims are objected-to for the following informalities:

Claims 7 and 8 each recite the limitation "set value" for what probably is meant to be a "predetermined value" of a parameter.

Appropriate correction is required.

### ***Claim(s) Rejections - 35 USC § 112, First Paragraph***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 6-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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Claim 6 recites, in part, the limitation "...idle operation is determined based on an inclination angle of a road surface..." ; claim 7 recites, in part, the limitation "... the engine is started up when the inclination angle of the road surface is equal to or larger than a first set value..."; claim 8 recites, in part, the limitation "...combustion being suspended when the inclination angle of a road surface is equal to or larger than a first set value...".

The disclosure including the specification and drawings as filed sets forth no apparatus, process or method whereby the vehicle can determine the angle of inclination of a road surface.

Appropriate correction or clarification is required. No new matter should be entered.

Should Applicant reply that the apparatus/process/method whereby the vehicle determines the angle of inclination of a road surface is conventional, Applicant should provide such evidence to that effect in the form of citation(s) of readily available reference(s) in the English language or other readily available documentation providing such evidence.

***Claim(s) Rejections - 35 USC § 112, 2<sup>nd</sup> Paragraph***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are replete with functional and indefinite language, failing to positively set forth and distinguish Applicant's invention. For example:

a) In claim 1, lines 13-16 recites in part: "...a combustion suspended idle operation in which the engine ... is run idly by the primary motor...". It is not clear from this recitation of the

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claim whether what is being claimed is that the engine is being run (such as being started) by the primary motor or that the engine, in a combustion suspended state, is being driven to rotate (without being started) by the primary motor, or whether some other condition of combined operation by the engine and primary motor is being claimed; and,

b) in claim 1 at lines 14-15 the recitation "... the engine which is being suspended from combustion is run idly...". The ordinary usage of the word "idle" in connection with an internal combustion engine would mean that the engine was running, but at a slow, sustainable rate, say of revolutions per minute. It is not clear how the engine could be suspended from combustion and simultaneously be considered to be running at idle speed;

Other examples exist. The claims should be carefully reviewed and revised to set forth the claimed invention in concise and unambiguous terms consistent with the disclosure of the invention.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Peters et al. (US 6425365).

Peters et al. discloses a hybrid vehicle comprising : (re: claim 1) an engine (Fig 1, item 12) for driving primary driving wheels (items W) via a transmission (17), the engine being able

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to be suspended from combustion (refer col 3, lines 8-12 and col 4, lines 57-64); a primary motor (14) disclosed between the engine and the transmission; a secondary motor (16) for driving one of the primary driving wheels and the secondary driving wheels which are different from the primary driving wheels (refer col 3, lines 6-8 and col 3, lines 49-52); and, an electricity storage unit (36) connected to the primary and secondary motors (refer col 3, lines 21-25), wherein the vehicle is driven by the secondary motor while allowing the primary motor to perform a combustion suspended idle operation in which the engine which is being suspended from combustion is run idly by the primary motor according to driving conditions of the vehicle (refer col 5, lines 9-23); and, (**re: claim 5**) wherein at least either an inlet valve or an exhaust valve is held closed during the combustion suspended idle operation (refer col 5, lines 2-8 and lines 18-23).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 6-8, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Peters et al. (US 6425365) in view of Kuang et al. (US 6590299).

a. As discussed above, Peters et al. discloses all of the limitations of claim 1 from which claims 6-8 depend.

b. Peters et al. lacks explicit disclosure of any hill-holding feature of the system wherein (**re: claim 6**) the engine is started from the combustion-suspended idle operation based on an

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inclination angle of the road surface and a residual capacity of the electricity storage unit; and (re: claim 7) the engine is started up when the inclination angle of the road surface is equal to or larger than a first predetermined value and the residual capacity of the battery is less than a second predetermined value, so that the primary motor is driven by the engine as a generator and the secondary motor is driven by the electrical power generated to the primary motor to drive the vehicle; and (re: claim 8) wherein the engine is run at idle with its combustion being suspended when the inclination angle of the road is equal to or larger than a first predetermined value and the residual capacity of the battery is equal to or larger than a second predetermined value, whereby the secondary motor is driven to generate a creeping force to prevent the reverse of the vehicle; and (re: claim 9) wherein with the engine started (i.e., running), if reverse motion of the vehicle on a sloped surface cannot be prevented by the creeping force generated by the secondary motor, a lock current preventing the reverse of the vehicle is supplied to the secondary motor.

c. However, Kuang et al. teaches a control strategy for a hybrid vehicle for hill-holding and creep capability which uses any one or all of the engine, primary motor/generator and secondary traction motor to achieve creep and hill-holding depending upon conditions of the vehicle drive system and electricity storage system and the inclination of the road surface. Refer to the reference at Figs 1-2, col 4, lines 1-3, 11- 19, 31-41, and 54-62, and further col 5, lines 6-17, and, as follows:

**Regarding the limitations of claim 6 as broadly claimed:** refer Kuang et al., col 2, lines 58-62. (As regards the further limitation of the claim of determining that a residual capacity exists in the electricity storage unit (battery) this is considered an inherent feature of any hybrid



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vehicle control system that depends upon the battery to supply energy to the motor. Refer col 5, lines 13-17.)

**Regarding the limitations of claim 7 as broadly claimed:** refer Kuang et al., col 5, lines 35-40, lines 42-47, and lines 51-53, and col 6, lines 6-9. (As regards the further limitation of the claim of determining that a residual capacity exists in the electricity storage unit (battery) this is considered an inherent feature of any hybrid vehicle control system that depends upon the battery to supply energy to the motor. Refer col 5, lines 13-17.)

**Regarding the limitations of claim 8 as broadly claimed:** refer Kuang et al., col 4 lines 54-62. (Regarding the further limitation of the claim of determining that a residual capacity exists in the electricity storage unit (battery) this is considered an inherent feature of any hybrid vehicle control system that depends upon the battery to supply energy to the motor. Refer col 5, lines 13-17.)

d. Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to have modified the hybrid vehicle drive system of Peters et al. to have hill-holding and creep and anti-reverse features in accordance with the teachings of Kuang et al. in order to provide hill-holding and vehicle creep and anti-reverse capabilities comparable to a conventional ICE vehicle with an automatic transmission while optimizing total power-train system efficiency and performance in various operating states of the system, as suggested by the reference at column 2, lines 30-34.

11. Claims 3-4, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Peters et al. (US 6425365) in view of Wakashiro et al. (US 6886649).



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As discussed above, Peters et al. discloses all of the limitations of claim 1 from which claims 3 and 4 each depends.

Peters et al. lacks explicit disclosure (**re: claim 3**) wherein a rotational speed of the primary motor which is performing the combustion suspended idle operation is maintained at a rotational speed which can provide minimum friction on the engine; and, (**re: claim 4**) wherein the combustion suspended idle operation is maintained at a rotational speed at which the engine can generate a predetermined oil pressure.

However, Wakashiro et al. teaches a hybrid vehicle comprising an engine for driving primary driving wheels via a transmission, the engine being able to be suspended from combustion and a primary motor disposed between the engine and the transmission wherein in the process of regenerative braking carried out by the primary motor is performed with all cylinders deactivated (combustion suspended) and at a rotational speed to decrease the energy loss due to cylinder friction and at a rotational speed of the primary motor performing the operation is maintained at a rotational speed at which the engine can generate a predetermined oil pressure (refer col 10, lines 43-48; col 11, line 11 to col 16, line 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to have modified the hybrid vehicle drive system disclosed by Peters et al. to include processes wherein during periods of regenerative braking with the engine combustion suspended wherein the primary motor will control the engine rotational speed to decrease the energy loss due to cylinder friction and to maintain rotational speed at which the engine generates a predetermined level of oil pressure as taught by Wakashiro et al. in order to reduce the energy loss due to pumping and suppress the inflow of fresh air into the exhaust

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system and in order to maintain the timing of the operation of the intake and exhaust valves even if the oil temperature changes as suggested by the reference at column 3, lines 12 to 35.

*Claims Not rejected in view of Prior Art*

12. Claim 9 is not rejected in this Office action as being anticipated by or as being unpatentable over the prior art of record. However, this claim is not in condition for allowance in view of its rejection under 35 U.S.C. § 112, First Paragraph as set forth herein above.

*Prior Art made of Record*

13. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. The prior art of Ochiai et al.; of Collins et al.; of Eguchi; of Yamamoto et al.; of Shimabukuro et al. (-022; -062); of Morimoto et al.; of Matsubara et al.; of Takano et al.; and of Hanada et al. each show features in common with some of the other structures of the inventive concept disclosed in the instant application.

*Conclusion*

14. Any inquiry concerning this or earlier communication(s) from the examiner should be directed to Gerald B. Klebe at 571-272-6695; Mon.-Fri., 8:00 AM - 4:30 PM ET, or to Supervisory Patent Examiner Christopher P. Ellis, Art Unit 3618, at 571-272-6914.

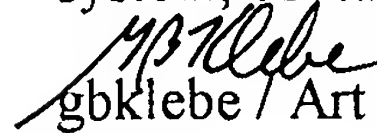
Official correspondence should be sent to the following TC 3600 Official number as follows: 571-273-8300.

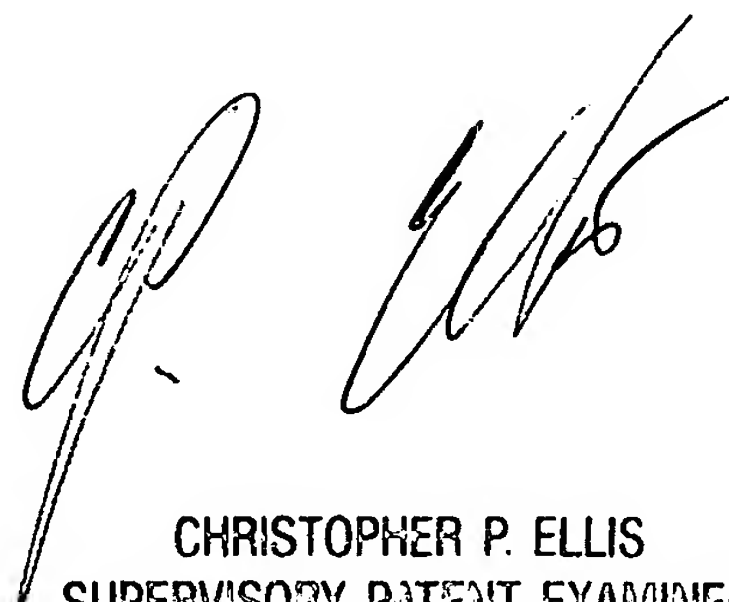
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 gbklebe / Art Unit 3618 / 29 September 2005

  
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